1969 OPERATING SUMMARY

FRANKFORD

- water pollution control plant
- water supply system

ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

Water management in Ontario

Ontario
Water Resources
Commission

135 St. Clair Ave. W.
Toronto 195
Ontario

The operating efficiency and financial status of the water pollution control and water treatment facilities operated for you in 1969 are presented in the following pages.

The regional operations engineer's comments and the statistical data will assist you in gauging the plant's level of performance. A new flow chart and up-to-date design data are also provided.

Various divisions and sections within the Commission have co-operated in providing what we trust is an accurate and concise annual operating summary.

D. S. Caverly,
General Manager.

D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

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FRANKFORD
water pollution control plant
and
water treatment plant

operated for

THE VILLAGE OF FRANKFORD

by the

ONTARIO WATER RESOURCES COMMISSION

1969 ANNUAL OPERATING SUMMARY

DESIGN DATA

PROJECT NO. 2-0009-57 TREATMENT High Rate Trickling Filter

DESIGN FLOW 0.54 mgd (primary); 0.12 mgd (secondary)

SEWAGE PUMPING STATION

Pumps

1 electric, 0.54 mgd @ 20' tdh
1 gasoline standby 0.54 mgd @ 20' tdh

PRIMARY TREATMENT

Coarse bar screen @ 1" centres

Grit Removal

Type: Manually-cleaned channels
Size: Two 9' x 2' x 1' water depth @ 0.54 mgd
Flow velocity: 0.5 ft/sec

Primary Sedimentation

Size: One 60' x 16' 6" x 7' 5" (46,500 gal)
Retention: 2 hr @ 0.54 mgd
Loading: Surface, 565 gpd/ft^2
Weir, 33,800 gpd/ft

SECONDARY TREATMENT

Type: Trickling filter
Size: One 42' dia x 4' depth
Recirculation: 3.1 through primary
Loading: 1.5 lb BOD/yd^3/day

SECONDARY SEDIMENTATION AND CHLORINATION

Type: Earth-banked pond
Size: One 16' x 40' x 3'
Retention: 2 hr @ 0.12 mgd

PROJECT NO. 6-0002-57

SOURCE

One well

TREATMENT

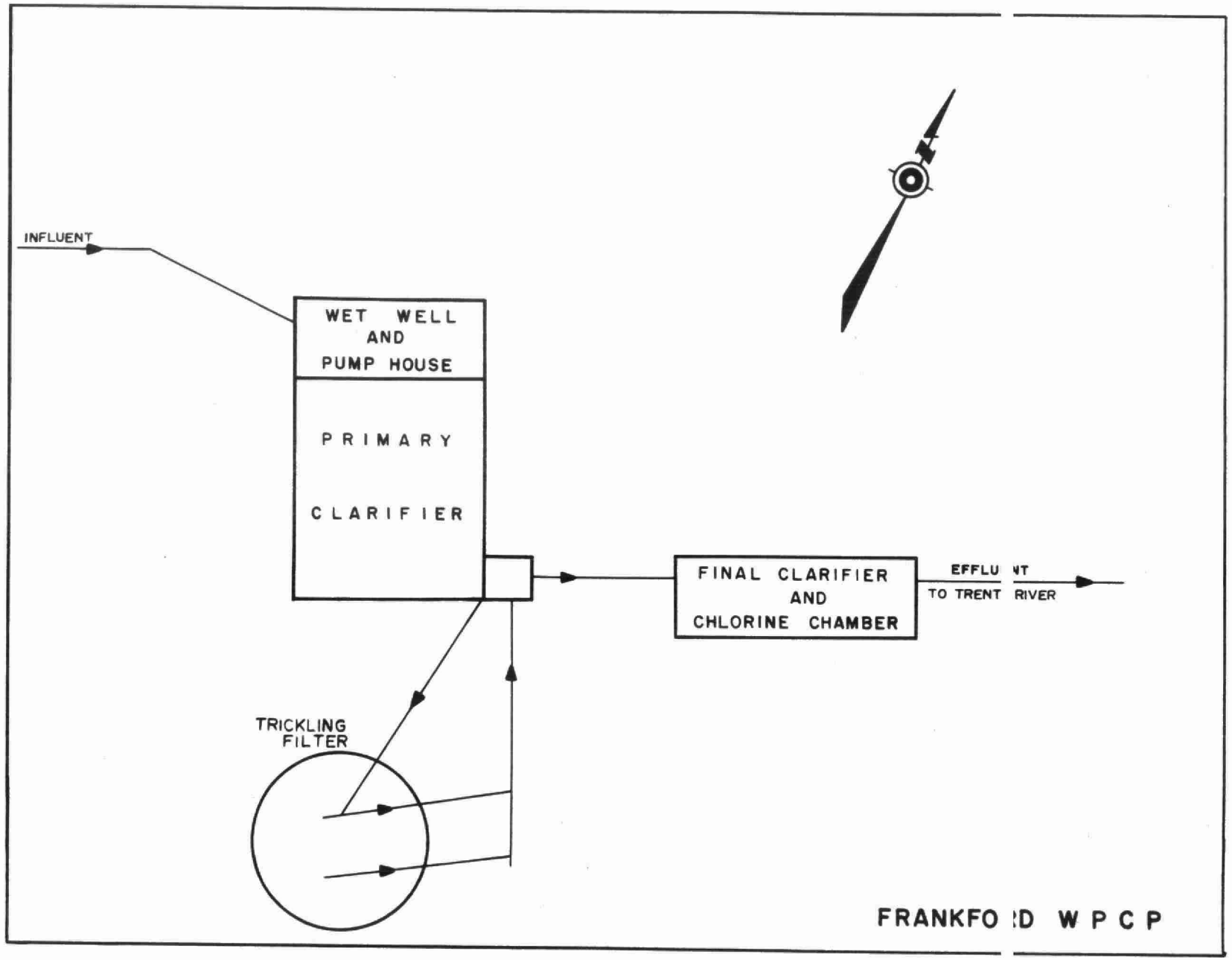
none

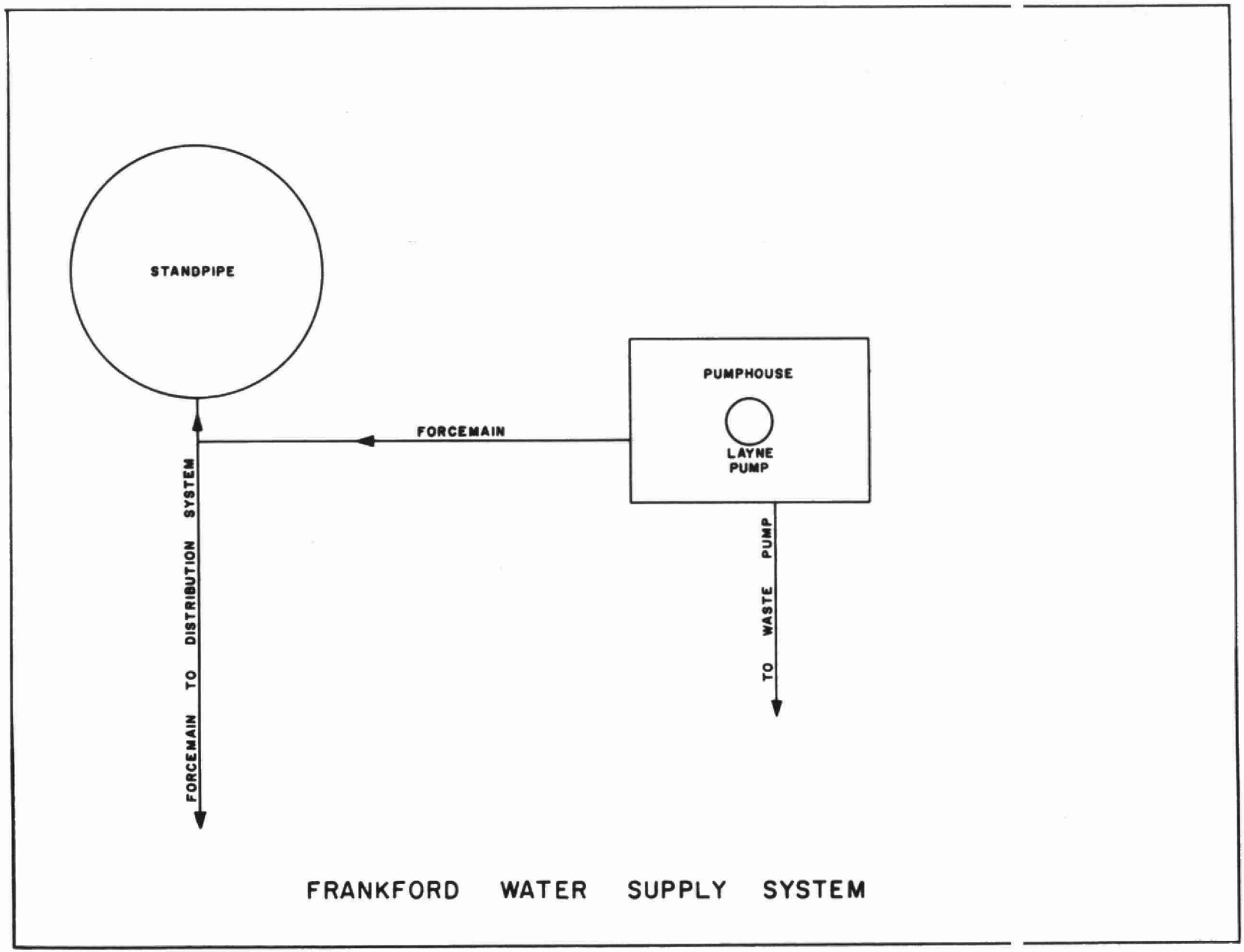
PUMPS

Type: Layne vertical turbine
Size: One 300 gpm (0.43 mgd)
Standby: none

STORAGE

One 115,000 gal steel standpipe


INFLUENT
WET WELL AND PUMP HOUSE
PRIMARY CLARIFIER
FINAL CLARIFIER AND CHLORINE CHAMBER
EFFLUENT TO TRENT RIVER
TRICKLING FILTER
FRANKFORD W P C P



FRANKFORD WATER SUPPLY SYSTEM

'69 REVIEW

GENERAL

The main sewage pump at the water pollution control plant was overhauled. A new shaft sleeve, bearings and seal were installed.

The standby gasoline engine on the standby sewage pump was overhauled in 1969. A new piston, connecting rod, rings and bearings were installed at this time.

The Chief Operator, Mr. H. Patrick, became ill in the early part of May and did not return to work until August, 1969. The sewage system was operated by Mr. B. Reynolds, the Village Foreman, during Mr. Patrick's absence. Casual help was engaged at times to aid Mr. Patrick in performing some of the more strenuous duties.

Several basement floodings occurred during the year on Scott St. and Trent St. N. due to blockages in the sewer.

EXPENDITURES

The total operating cost for the sewage system for 1969 was $9195.85. This was an increase of approximately 35% over 1968 owing to increases in wages and casual help.

PLANT FLOWS and CHLORINATION

The actual flow of raw sewage to the plant cannot be calculated accurately for the greater part of the year because a portion of the trickling filter effluent is recirculated with the incoming raw sewage.

During the beginning and latter part of the year when the weather does not permit recirculation, the plant flows can be roughly calculated via time totalizers which are connected to the raw sewage pump. The average daily flow for 1969 was approximately 0.14 million gallons. A total of 2029 lbs. of chlorine was used in 1969 to disinfect the plant effluent.

PLANT EFFICIENCY

The average concentrations of BOD and suspended solids in the plant influent were 105 and 117 milligrams per litre respectively. The average concentrations of BOD and suspended solids in the effluent were 27 and 25 mg/l. The average percent reductions in BOD and suspended solids were 74 and 79.

WATER SYSTEM

A total flow of 32.57 million gallons was recorded at the water pumping station in 1969. The average daily flow in 1969 was 0.089 million gallons.

The total operating cost for the water system was $3,252.40 in 1969. The operating costs increased by 31 percent from 1968, primarily as a result of higher payroll and equipment expenses.

CONCLUSIONS

The percent reduction of BOD and suspended solids at the plant was acceptable for a trickling filter plant.

The design report for plant enlargement was nearing completion at the end of the year.

The deep well pump was pulled and inspected in 1969. No repairs were necessary at this time and the pump was immediately reinstalled and returned to service.

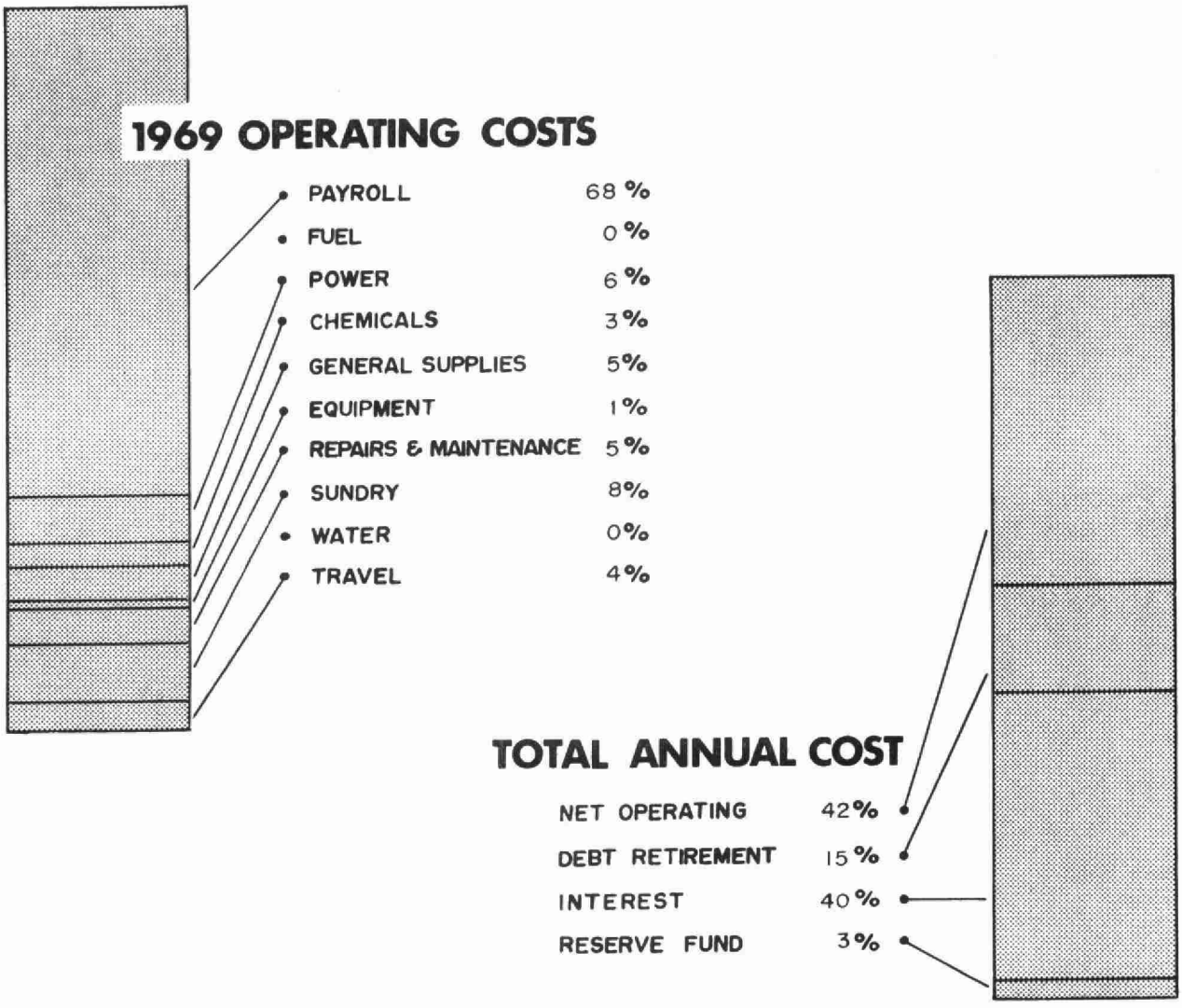
PROJECT COSTS

2-0009-57 (Sewage)

NET CAPITAL COST (Final)	$162,062.20
DEDUCT - Payments from Municipalities	4,899.45
Long Term Debt to OWRC	$157,162.75
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1969	$ 36,761.36
Net Operating	$ 9,195.85
Debt Retirement	3,172.00
Reserve	685.59
Interest Charged	8,798.74
TOTAL	$ 21,852.18

RESERVE ACCOUNT

Balance @ January 1, 1969	$ 7,307.84
Deposited by Municipalities	685.59
Interest Earned	430.66
	$ 8,424.09
Less Expenditures	-
Balance @ December 31, 1969	$ 8,424.09



Yearly Operating Costs

YEAR	MILLION GALLONS TREATED	TOTAL OPERATING COSTS	COST PER MILLION GAL	COST PER LB OF BOD REMOVED
1965	70	$4,920.71	$ 70.00	
1966	56	5,615.77	100.00	
1967	60	6,027.80	100.00	
1968	64	6,802.96	100.00	
1969	50	9,195.85	183.92	

Monthly Operating Costs

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDRY	WATER	TRAVEL
JAN	609.17	558.86	-	-	50.31	-	-	-	-	-	-	-
FEB	536.13	357.04	-	-	43.88	-	64.72	-	-	2.47	-	38.02
MAR	443.51	357.04	-	-	43.24	-	-	-	-	4.63	-	18.60
APR	793.14	480.32	101.80	-	38.82	-	51.72	-	87.08	5.18	-	18.22
MAY	780.09	481.27	91.75	-	47.76	-	40.29	-	-	7.30	-	31.72
JUNE	933.00	452.33	103.20	-	58.40	132.30	79.68	52.50	-	4.59	-	30.00
JULY	742.73	438.12	65.73	-	44.10	-	32.26	-	69.71	6.06	-	76.75
AUG	1056.20	531.94	109.53	-	38.90	-	27.56	86.58	44.39	13.30	-	54.00
SEPT	1059.23	462.79	234.17	-	31.75	-	41.87	-	48.60	23.30	-	36.75
OCT	678.95	381.98	205.72	-	33.70	-	20.90	-	-	0.55	-	26.10
NOV	742.16	482.46	12.48	-	70.75	132.30	39.42	(46.00)	-	8.05	-	32.70
DEC	821.54	384.27	-	-	44.75	-	25.35	-	221.96	8.04	-	47.17
TOTAL	9195.85	5368.42	924.38	-	546.36	264.60	423.77	93.08	471.74	63.47	-	410.03

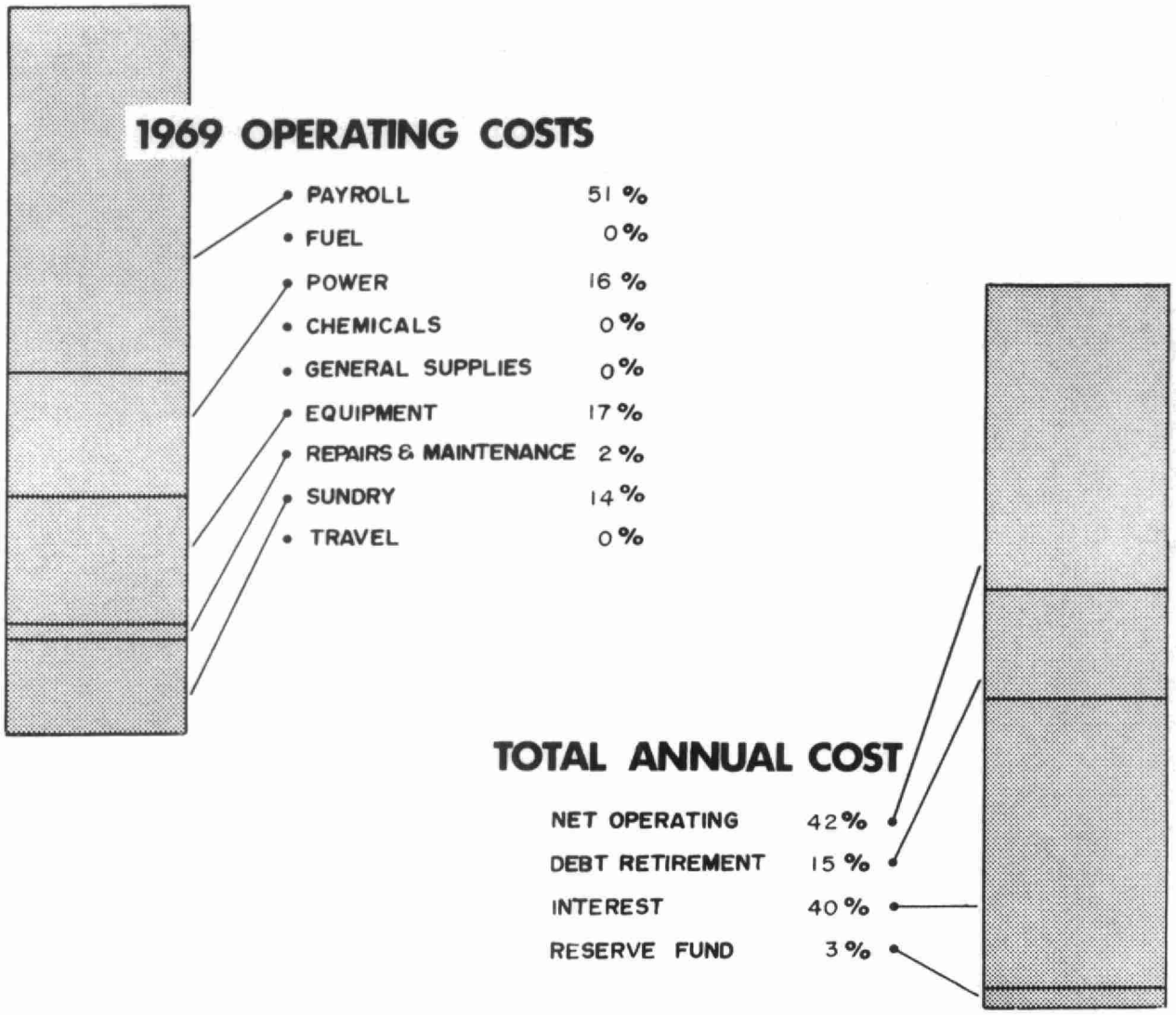
BRACKETS INDICATE CREDIT

6-0002-57 (Water)

NET CAPITAL COST (Final)	
Long Term Debt to OWRC	$119,401.83
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1969	$ 27,353.55
Net Operating	$ 3,252.40
Debt Retirement	2,410.00
Reserve	432.17
Interest Charged	6,684.70
TOTAL	$ 12,779.27

RESERVE ACCOUNT

Balance @ January 1, 1969	$ 6,609.92
Deposited by Municipality	432.17
Interest Earned	372.70
	$ 7,414.79
Less Expenditures	435.00
Balance @ December 31, 1969	$ 6,979.79



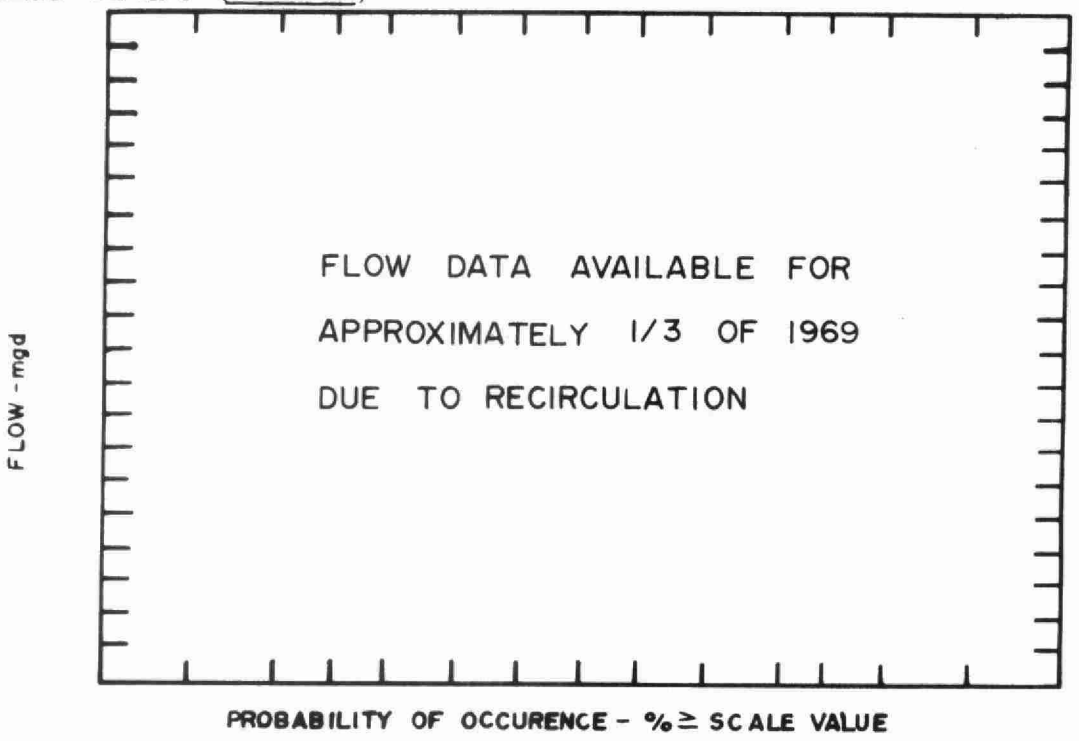
Yearly Operating Costs

YEAR	MILLION GALLONS TREATED	TOTAL OPERATING COSTS	COST PER THOUSAND GALLONS
1965	30.495	$2,065,84	$0.07
1966	34.353	1,940.37	0.60
1967	30.912	1,887.25	0.06
1968	27.439	2,480.77	0.09
1969	32.574	3,252.40	0.10

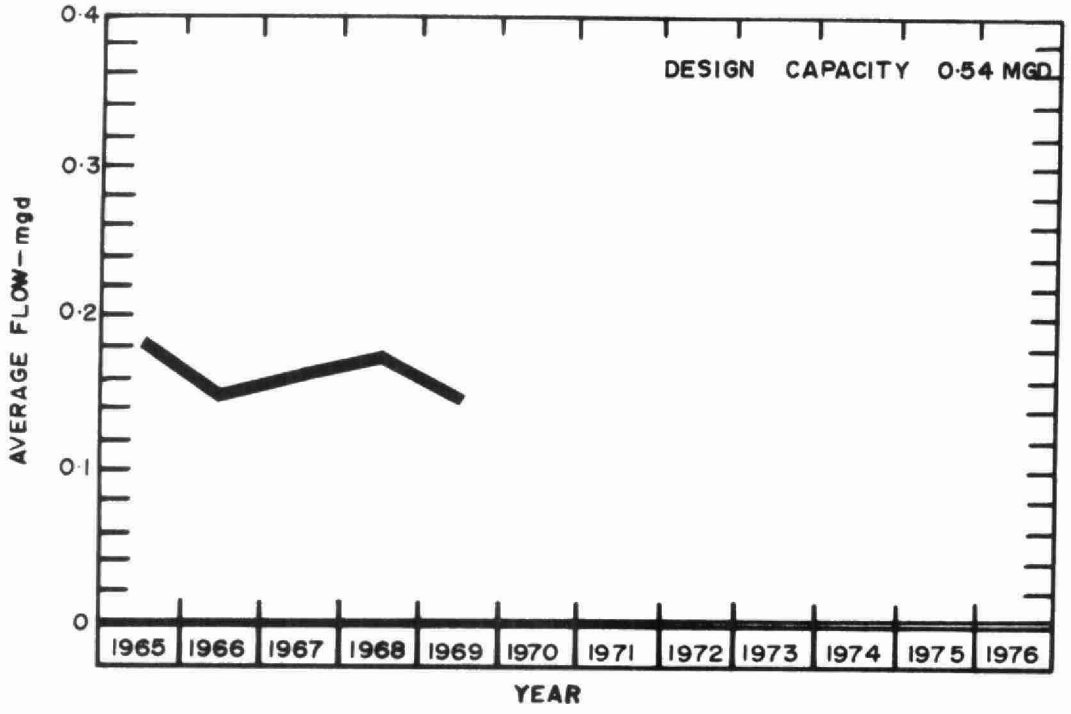
Monthly Operating Costs

MONTH	TOTAL	PAYROLL	CASUAL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	SUNDRY	TRAVEL
JAN	237.71	183.87			53.84						
FEB	176.12	116.60			59.52						
MAR	234.97	116.60			53.77				55.36	9.24	
APRIL	645.82	157.69			49.88			438.25			
MAY	209.89	158.00			52.89						
JUNE	202.90	118.60			31.80			52.50			
JULY	154.90	116.60			38.30					.81	
AUG	236.11	174.90			60.40						
SEPT	635.75	119.67			56.50			50.58		409.00	
OCT	163.45	124.50			38.95						
NOV	202.79	157.99			44.80						
DEC	151.99	122.70								29.29	
TOTAL	3252.40	1667.72	—	—	539.65	—	—	541.33	55.36	448.34	—

PROCESS DATA (SEWAGE)



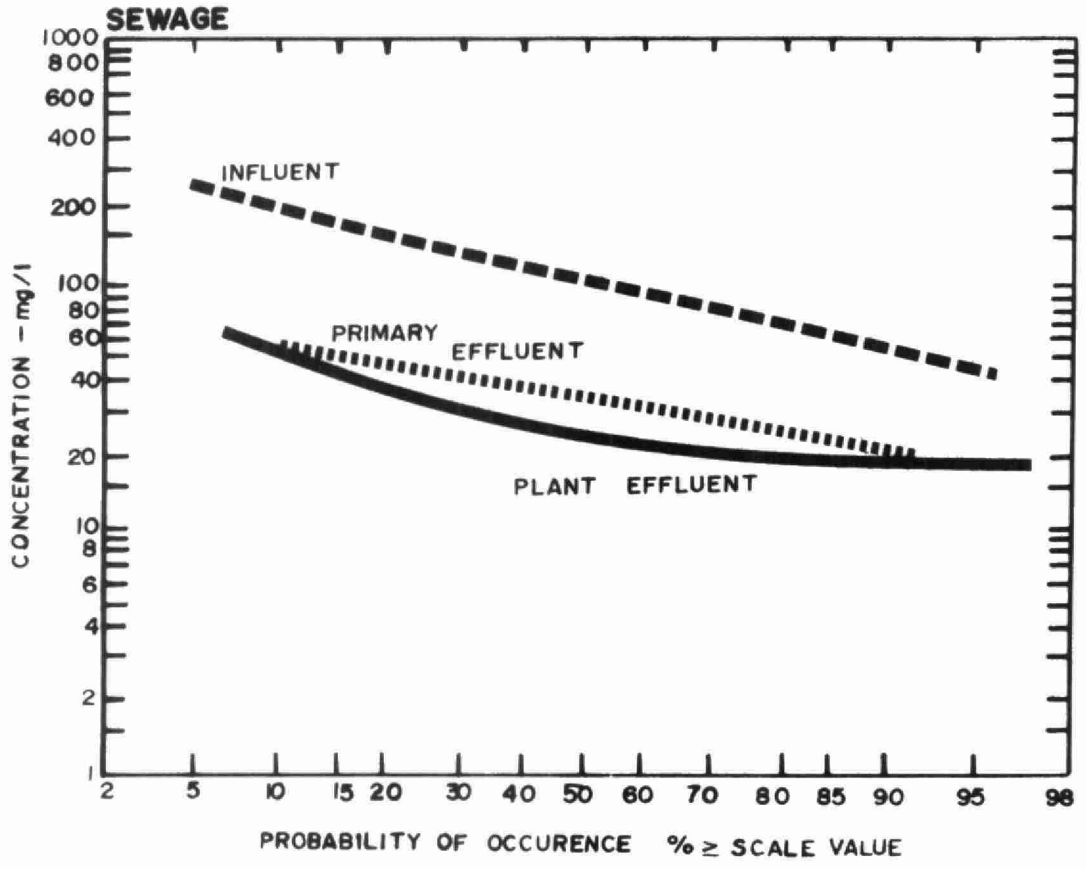
FLOWS



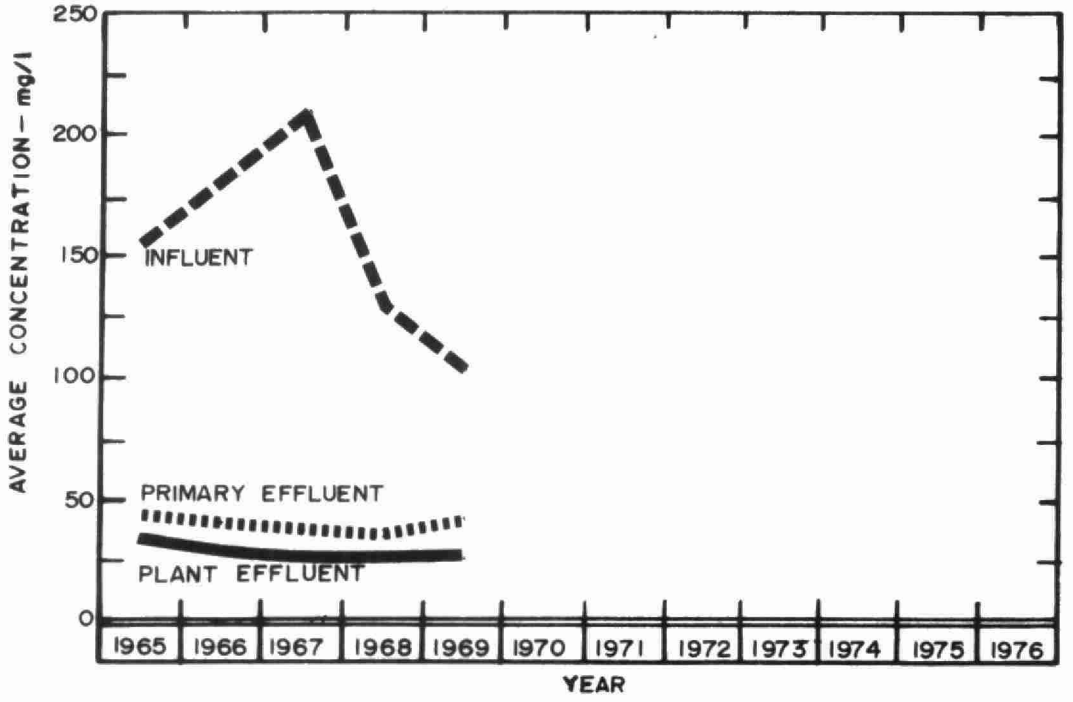
PLANT FLOWS and CHLORINATION

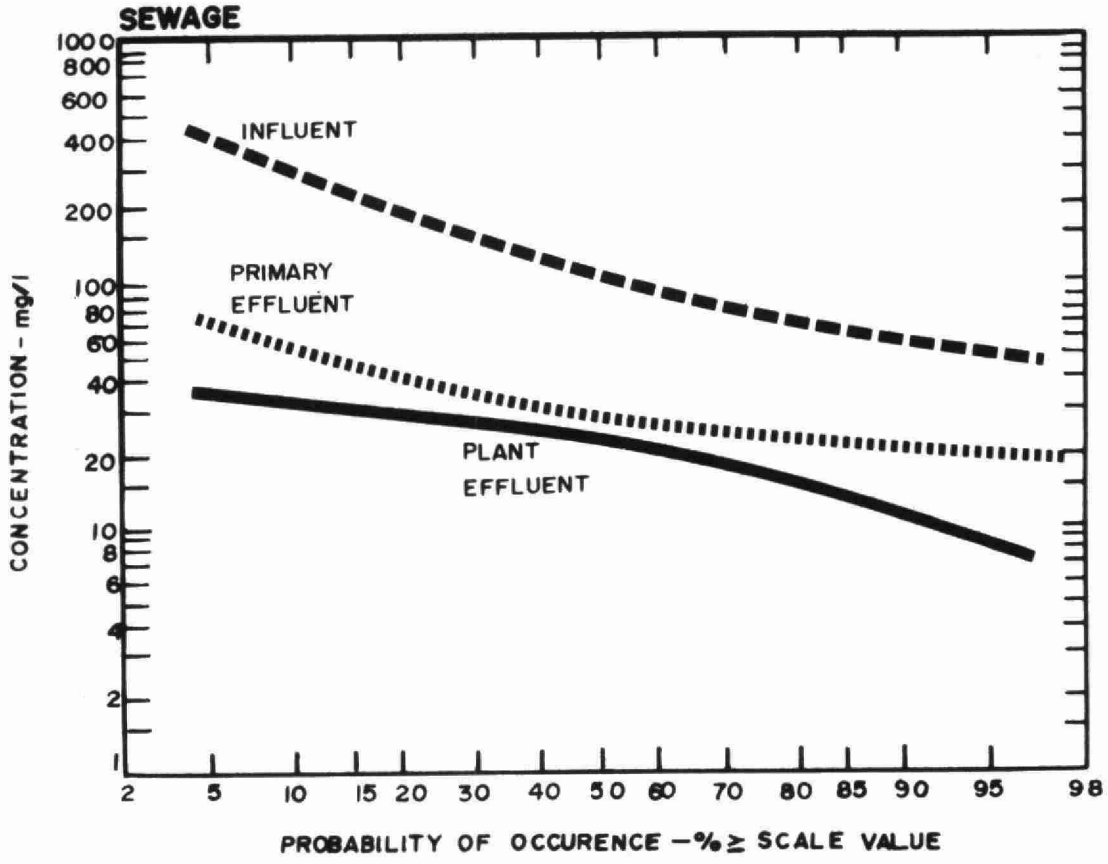
MONTH	TOTAL FLOW mil gal	AVERAGE DAILY FLOW mil gal	MAXIMUM DAILY FLOW mil gal	MINIMUM DAILY FLOW mil gal	CHLORINE USED pounds	DOSAGE mg/l
JAN	3.568	0.115	-	-	188	-
FEB	3.693	0.132	-	-	178	-
MAR	4.983	0.161	-	-	169	-
APR	2.981*	0.199	-	-	182	-
MAY	-	-	-	-	177	-
JUNE	-	-	-	-	163	-
JULY	-	-	-	-	174	-
AUG	-	-	-	-	180	-
SEPT	-	-	-	-	146	-
OCT	-	-	-	-	155	-
NOV	-	-	-	-	157	-
DEC	0.760*	0.127	-	-	160	-
TOTAL	-	-	-	-	2029	-
AVERAGE	-	0.144	-	-	169	-

* Recirculation (through flow meter) began April 16 and was discontinued on December 24.

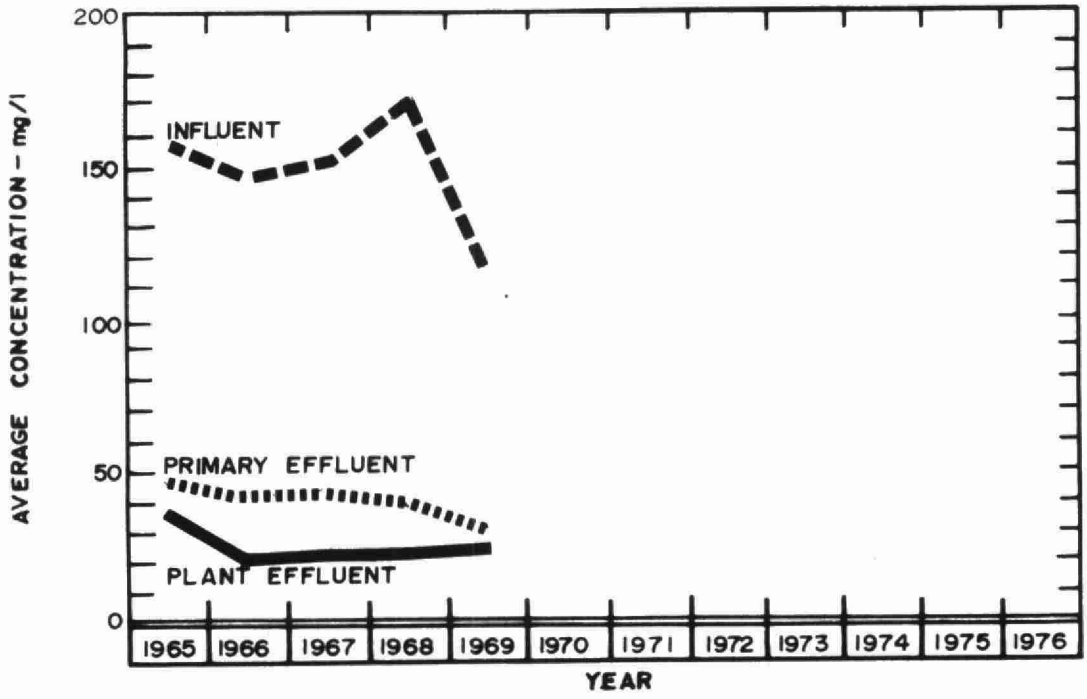


BIOCHEMICAL OXYGEN DEMAND





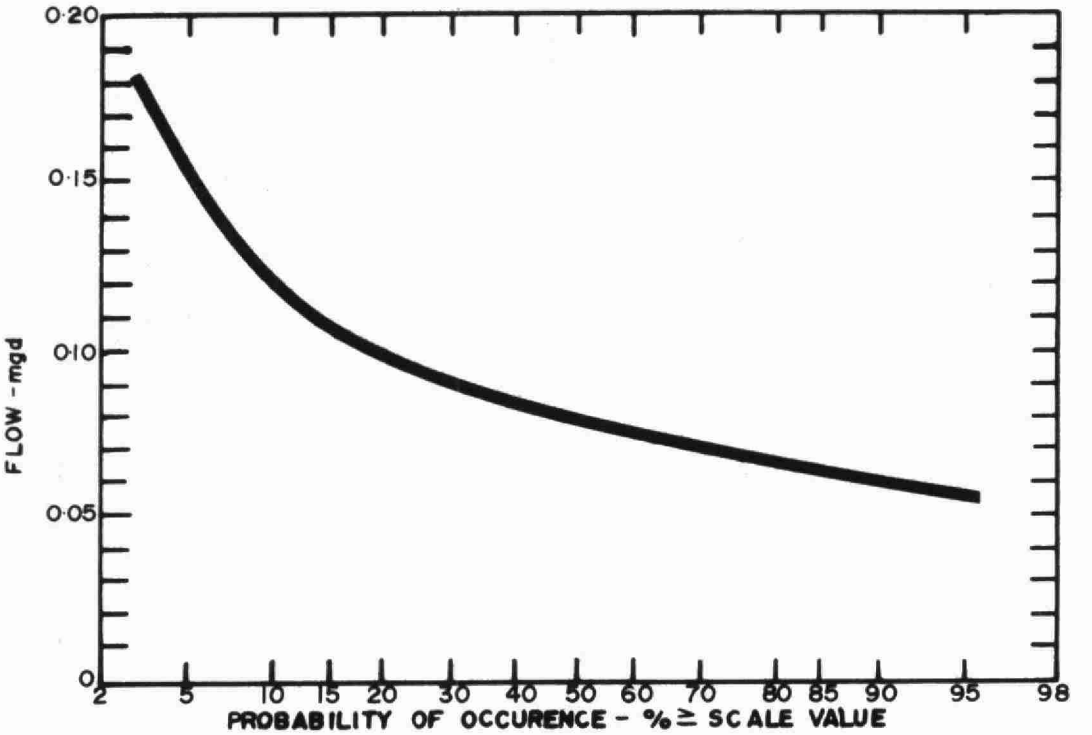
SUSPENDED SOLIDS



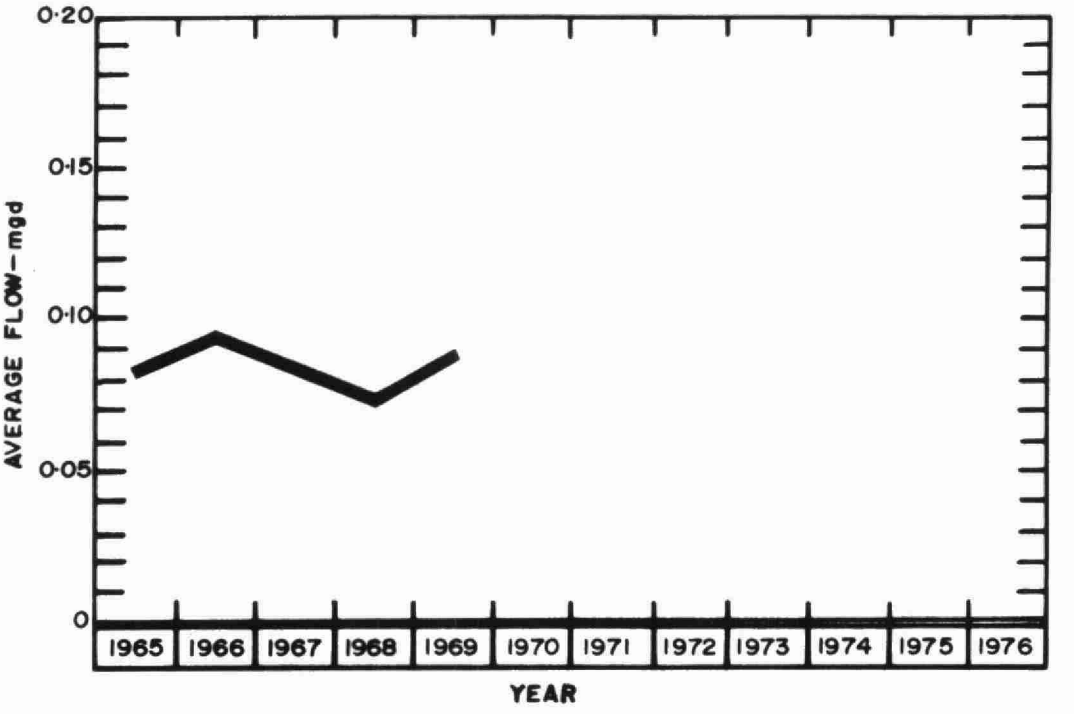
PLANT EFFICIENCY

MONTH	BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				GRIT REMOVAL
	INF.	EFF.	REDUCTION		INF. CONCN	EFF. CONCN	REDUCTION		
	mg/l	mg/l	%	10 pounds	mg/l	mg/l	%	10 pounds	cu ft
JAN	-	-	-	-	-	-	-	-	5
FEB	80	28	65	-	70	30	57	-	4
MAR	70	45	36	-	110	30	73	-	5
APR	-	-	-	-	-	-	-	-	4
MAY	-	-	-	-	-	-	-	-	1
JUNE	-	-	-	-	-	-	-	-	5
JULY	-	-	-	-	-	-	-	-	7
AUG	54	28	48	-	55	15	73	-	10
SEPT	170	20	88	-	150	20	87	-	4
OCT	-	-	-	-	-	-	-	-	4
NOV	90	24	73	-	100	20	80	-	4
DEC	165	22	87	-	220	35	84	-	2
TOTAL	-	-	-	-	-	-	-	-	55
AVERAGE	105	27	74	-	117	25	79	-	5

PROCESS DATA (WATER)



FLOWS



PLANT FLOWS

MONTH	TOTAL FLOW mil gal	AVERAGE DAILY FLOW mil gal	MAXIMUM DAILY FLOW mil gal	MINIMUM DAILY FLOW mil gal
JAN	2.578	.083	.109	.063
FEB	2.197	.078	.103	.060
MAR	2.398	.077	.091	.062
APR	2.137	.071	.089	.058
MAY	2.315	.075	.122	.056
JUNE	3.087	.103	.264	.066
JULY	3.672	.118	.263	.070
AUG	3.634	.117	.194	.077
SEPT	3.310	.110	.218	.054
OCT	2.496	.081	.100	.054
NOV	2.316	.077	.175	.060
DEC	2.434	.079	.105	.044
TOTAL	32.574	-	-	-
AVERAGE	2.715	.089	-	-

WATER QUALITY

MONTH	COLIFORM			
	RAW WATER		TREATED WATER	
	NUMBER OF SAMPLES TAKEN	AVERAGE DENSITY No./100ml	NUMBER OF SAMPLES TAKEN	NUMBER WITH COLIFORMS > 0/100 ml
JAN	2	0	2	0
FEB	4	0	4	0
MAR	2	0	2	0
APR	4	0	4	0
MAY	0	-	0	-
JUNE	0	-	0	-
JULY	1	0	1	0
AUG	0	-	1	0
SEPT	4	0	4	0
OCT	3	0	3	0
NOV	2	0	2	0
DEC	3	0	3	0
TOTAL	25	-	26	-
AVERAGE	2	0	2	0

	DATE DUE		

Water management in Ontario